USSR

UDC: 53.07/.08+53.001.5

GUDKOV, A. N., GRESHILOV, A. A., KOLOBASHKIN, V. M., MIKAYEV, Ye. M.

"Using 'Xenon-133' Gas to Calibrate Scintillation Gamma Spectrometers"

V sb. Vopr. dozimetrii i zashchity ot izluch. (Problems of Dosimetry and Radiation Shielding--collection of works), vyp. 12, Moscow, Atomizdat, 1971, pp 163-170 (from RZh-Fizika, No 4, Apr 72, Abstract No 4A688)

Translation: The paper deals with the peculiarities of using a "Xenon-133" gas source to calibrate scintillation spectrometers for determining the content of ^{133}Xe and ^{131m}Xe isotopes in gas mixtures. Bibliography of 6 titles. M. L.

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USSR

UDC 532.526.4

GRESHILOV, Ye. M., YEVTUSHENKO, A. V., LYAMSHEV, L. M.

"Fluctuations in Pressure During Flow of Weak Solutions of Polymers Along Rough Boundaries"

Moscow, Doklady Akademii Nauk SSSR, Vol 207, No 6, 1972, pp 1,288-1,291.

Abstract: Results are presented from studies of spectral characteristics of boundary-layer fluctuations in pressure with turbulent flow of weak solutions of polymers along rough boundaries. The experimental studies were performed in a low-noise hydrodynamic gravitation-type channel. All measurements were performed at the end of the working sector, where the flow was stabilized. Roughness was created by applying grains of sand in two fractions to both of the broad walls of the working sector of the channel. The effect of reduced resistance and damping of small-scale turbulence is retained when the polymer solution flows along rough boundaries even when the roughness appears in a transient mode. This may mean that the mechanism of damping of turbulence and the effect of reduction of resistance when a polymer solution flows along smooth boundaries is not directly related to stabilization of vortices on the boundary of the viscous sublayer as has been earlier assumed. The primary processes occur in the zone of generation of turbulence or the buffer zone of turbulence of the boundary layer.

1/1

USSR

UDC: 532.542.4:534

GRESHILOV, Ye. M., Acoustics Institute of the Academy of Sciences of the USSR, Moscow

"Effect of Distributed Sand Roughness on the Spectrum of Pressure Pulsations of a Turbulent Flow Near the Wall in a Tube"

Moscow, Akusticheskiy Zhurnal, Vol 18, No 2, Apr-Jun 72, pp 212-218

Abstract: An experimental study is made of the spectral characteristics of turbulent pressure fluctuations as a function of the roughness of the wall underlying a turbulent flow. Measurements were made in a 2 × 7 cm rectangular tube at a distance of 150 cm from the inlet where steady-state flow was observed with an equivalent boundary layer thickness of 1 cm. The average flow velocity varied from 2 to 10 m/s, and the average height of the roughness varied from 10^{-2} to $5.2 \cdot 10^{-2}$. The studies were done with water as the working fluid. A pressure pulsation gauge with a sensitivity of 1.2 μV/bar was installed flush with the wall of the tube. The signal was analyzed in ⅓-octave steps from 20 to 20 000 Hz. The results of the research are given in the form of graphs showing the increase in spectral levels in dB over the levels observed for a smooth surface as a function of

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201020002-2"

USSR

GRESHILOV, Ye. M., Akusticheskiy Zhurnal, Vol 18, No 2, Apr-Jun 72, pp 212-218

the Strouhal number. The measurement results are related to the two-layer model of turbulence on a rough wall. The author thanks L. M. Lyamshev for interest in the work.

2/2

1/2 030 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--LUBRICANT FOR THE COLD AND HOT WORKING OF METALS -U-

AUTHOR-(05)-BERGELSON, L.S., DYATLOVITSKAYA, E.V., GRESHNYKH, K.P., GILZIN, P.A., CHAMIN, I.A.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 265,351

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--METALWORKING LUBRICANT, COLD WORKING, HOT WORKING, CHEMICAL PATENT, LUBRICANT ADDITIVE, PETROLEUM PRODUCT, HYDROGENATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1301 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0139634

UNCLASSIFIED

2/2 030 UNCLASSIFIED PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AA0130634
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE LUBRICANT IS PREPD. BY MICROBIOLOGICAL TRANSFORMATION OF A PARAFFIN CONTG. PETROLEUM PRODUCT, HYDROGENATION OF THE RESULTING PRODUCT, DEODORIZATION, AND MIXING WITH ADDITIVES. FACILITY: INSTITUTE OF CHEMISTRY OF NATURAL COMPOUNDS, ACADEMY OF SCIENCES, U.S.S.R.

UNCLASSIFIED

USSR

UDC 621.791.046:669.136.8

GRETSKIY, Yu. Ya., METLUTSKIY, V. A., Institute of Electric Welding, imeni Ye. O. Paton, Acad. Sci. UkSSSR

"Mechanized Welding and Surfacing of Cast Iron with Spheroidal Graphite Using a Powder Wire"

Avtomaticheskaya Svarka, No 10, 1971, pp 36-38.

Abstract: A new method has been developed for surfacing of cast iron with spheroidal graphite using arc welding with a powder wire of a new composition. The basic advantage of this method is that cast iron with spheroidal graphite and ferrite-pearlite metal base is produced consistently in the surfaced metal and transition zone. This is achieved by introduction of graphitizing elements (carbon and silicon) plus complex modifiers capable of globurization of the graphite inclusions to the composition of the wire. The use of the new powder wire also has allowed mechanization of welding of high-strength cast iron for the first time. The use of the new mechanized method for welding and surfacing of high-strength cast iron with spherical graphite allows the yield of useable cast products to be increased and allows a technology of manufacture of welded-cast products of this metal to be developed.

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USSR

UDC 533.6.011

AVDUYEVSKIY, V. S., GRETSOV, V. K., and MEDVEDEV, K. I., (Moscow)

"Stability of Flows with Forward Separation Regions"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 1, Jan-Feb 72, pp 74-81

Abstract: The instability phenomenon of the two-dimensional and axisymmetrical separation regions, originating at the leading edge of a semi-infinite plate with a flat step, and at the cone apex with an axisymmetrical step (with a shield) is investigated. It is assumed that separation region instability means a periodical strong expansion, a complete disappearance and a new formation of separation region. Pulsations of a two-dimensional separation region were observed during study of a laminar and turbulent flow conditions in a boundary layer in front of a step in the Mach range from M=2,9 to 6. A stability criterium of two-dimensional and axisymmetrical flow with a forward separation region was established on the basis of experimental results. The results of tests with a transition from a two-dimensional to three-dimensional separation region show that pulsations cease when a side outflow of gas from separation region becomes significant.

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USSR

AVDUYEVSKIY, V. S., GRETSOV, V. K., Moscow

"Investigation of Three-Dimensional Detached Flow around Half-Cones Lying on a Flat Plate"

Moscow, IAN SSSR, Mekhanika Zhidkosti i Gaza, No 6, Nov/Dec 70, pp 112-115

Abstract: Some results are given from an experimental study of the effect which viscosity has on supersonic flow around circular half-cones lying on a flat plane. The geometric characteristics of zones of detachment of the turbulent boundary layer on the plate are determined, and the physical singularities of flow in these zones are studied. The position of the lines of spreading and detachment on the surface of the half-cones is determined as a function of the angle of turn of the half-cone relative to the vector of velocity of the undistrubed flow. Data on the pressure distribution in the zones of detachment on the plate show that flow in the cross section normal to the line of detachment may be treated as two-dimensional. The experiments were conducted at Mach numbers of 2.1-3.7, and the Reynolds numbers were varied from $1.5 \cdot 10^7$ to $4.4 \cdot 10^7$. The boundary layer on the plate in front of the half-cones is turbulent. Half-cones with vertex angles of 10-45° were tested. The angle of turn of the half-cones was varied from 0 to 25°.

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USSR

UDC: 621.317.411

GREVE, Yu. O., STRAUTS, A. S., RANKIS, G. Zh.

"Investigation of the Magnetic Spectra of Ferrites Subjected to a Magnetizing Field and Mechanical Stresses in Different Directions"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 1), Novosibirsk, 1970, pp 125-126 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A358)

Translation: On the basis of a method previously developed by the authors for measuring complex permittivities and components of the tensor of magnetic permeability of ferrites and dielectrics with the use of a symmetric strip line, an installation is constructed for studying the magnetic spectra of ferrites in a band from a few tens of MHz to 10,000 MHz under the effect of an external magnetic field or mechanical stresses. The installation consists of a universal electromagnet in whose gap the strip line is located with the specimen of ferrite and a pickup of mechanical stresses. One illustration, bibliography of five titles. N. S.

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UDC: 621.78:534-8

USSR

AYZENTSON, YE. G., VINOGRADOV, V. V., GREVNOV, L. M., and SYCHEV, YE. N., Perm State University

"The Effect of Ultrasound on the High-Temperature Aging of EI69 Grade Steel"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 4, 1973, pp 142-145

Abstract: The authors study the effect of ultrasound on the carbide formation and state of the EI69 grade austenite steel (0.48 percent C, 0.27 percent Si, 0.42 percent Mn, 0.015 percent P, 0.020 percent S, 13.23 percent Cr, 13.30 percent Ni, 0.39 percent Mo, and 2.27 percent W) during its high-temperature aging process. Billets from this grade of steel were held at 1215°C in a salt bath for one hour and cooled in water. Specimens were turned from these billets 10 mm in diameter and 210 mm long. These were subjected to ultrasound with an amplitude within an antinode shift of 15 microns at 700 and 750°C for 15, 30, 60, 90, and 120 minutes with subsequent cooling in water. Control specimens were subjected to the same heat treatment but without ultrasound. Maximal stress cross sections of control and specimens subjected to ultrasound were subjected to x-ray and electron microscope studies. The results show that processing EI69 grade steel with ultrasound during its high-temperature aging leads to the development of a dislocation type structure in the matrix. To this is related the more intense granulation of the

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AYZENTSON, YE. G. et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 4, 1973, pp 142-145

austenite blocks in the [111] and [200] orientations in the specimens subjected to ultrasound. An increase in the dispersion of the substructure under the effect of ultrasound results in higher steel hardness. It is shown that subjecting steel to ultrasound increases the rate of carbide particle growth and raises the parameter of the crystal lattice of the carbide phase. This could be related to the intensification of the diffusion processes.

Transformation and Structure

UDC 669.14.018.8:621.789.2

USSR

AYZENTSON, YE. G., GREVNOV, L. M., and UTROBINA, I. K., Perm' State University

"Effect of Ultrasonic Machining at 1000° C on the Fine Structure of iKhk8N9T Austenite Steel"

Moscow, Izvestiya Vysshikh Uchebenykh Zavedeniy -- Chernaya Metallurgiya, No 2, 1970, pp 114-117

Abstract: An investigation was made of specimens of 1Kh18N9T austenite steel ultrasonically machines at 1000° C for 20 min. In the process of sonication standing waves with amplitude of 3, 5, 10, and 15 mkm were produced in specimens at the place of maximum migration. In sections of specimens corresponding to areas of maximum ultrasonic stresses, the following were observed: a) under the effect of ultrasound, equiaxial mosaic structures were produced, whose dimensions (in comparison with control specimens) were larger in the direction [111] and samller in the direction [200]; b) characteristic temperature did not change; c) static distortions with tendency to increased; saturation; d) the austenite lattice constant decreased. The

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AYZENTSON, YE. G., et al., Izvestiya Vysshikh Uchevenykh Zavedeniy -- Chernaya Metallurgiya, No 2, 1970, pp 114-117

observed effects are explained by the development of a dislocation structure in steel under the effect of ultrasound.

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UDC 547.294'22'13

USSR

LIN'KOVA, M. G., GREYCHUTE, D. I., RASTEYKENE, L. P., and KNUNYANTS, I. L., Institute of Heteroorganic Compounds, Academy of Sciences USSR

"Bis- β-chloroethyl Sulfides. 2. Derivatives of α-Chloro-β-(β-chloroethylthio)- and α-(β-chloroethylthio)-β-chloroisobutyric Acid"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, Nov 71, pp 2522-2529

Abstract: The article deals with the synthesis of modified yperite derivatives and the study of theri chemical and biological properties. The addition of methyl-, phenyl- and β-chloroethylsulfenyl chloride to methacrylic acid derivatives in CCl_4, $CHCl_3$, ether or CH_2Cl_2 at low or room temperature proceeds preferentially to give the corresponding β-chloro- α-thioesters. For purposes of comparing properties, isomeric α-chloro-β-(β-chloroethylthio) derivatives of isobutyric acid were obtained by the decomposition of α-chloro-α-methyl- β-propiothiolactone. Of the compounds obtained by the addition of sulfenyl chlorides to methacrylic acid and its derivatives the most stable is α-alkthio- β-chloroisobutyronitrile, which is not isomerized under normal conditions. Least stable are amides of α-alkthio- β-chloroisobutyric acid, 1/2

USSR

LIN'KOVA, M. G., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya No 11, Nov 71, pp 2522-2529

which are isomerized under normal conditions into corresponding amides of β-alkthio- α-chloroisobutyric acid. No isomerization of β-chloro- α-phenylthio derivatives of isobutyric acid was observed.

2/2

1/3 019 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--PREASSEMBLY TEST OF THE WORLD'S LARGEST OPTICAL TELE COPE -U-

AUTHOR-(02)-GREYDINGER, A.G., NIKOLAYEVSKIY, YE.YA.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, MONTAZHNYYE I SPETSIAL'NYYE RABOTY V STROITEL'STVA, NO 4, 1970, PP 26-29

DATE PUBLISHED-------70

SUBJECT AREAS--ASTRONOMY,ASTROPHYSICS, NAVIGATION

TOPIC TAGS--AZIMUTHAL TELESCOPE, OPTIC MIRROR, TELESCOPIC EQUIPMENT, TELESCOPE COMPONENT, AZIMUTH, TELESCOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/1324 STEP NO--UR/9087/70/000/004/0026/0029

CIRC ACCESSION NO--AP0131770 UNCLASSIFIED

2/3 019 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0131770

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MICROFICHE OF ABSTRACT CONTAINS GRAPHIC INFORMATION. ASSEMBLY OF THE BTA (LARGE AZIMUTHAL TELESCOPE), THE WORLD'S LARGEST OPTICAL TELESCOPE, IS NOW BEING COMPLETED IN THE NORTHERN CAUCASUS AT AN ELEVATION MORE THAN 2,000 M ABOVE SEA LEVEL. THE MIRROR DIAMETER IS 6 M. IT WEIGHS ABOUT 800 TONS AND ITS HEIGHT IS GREATER THAN 40 M. THE INSTRUMENT WAS DESIGNED AND CONSTRUCTED BY THE LENINGRAD OPTICAL MECHANICAL COMBINE UNDER THE DIRECTION OF B. K. IOANNISIANI. IN CONTRAST TO ALL EXISTING LARGE TELESCOPES, THE BTA DOES NOT HAVE AN EQUATORIAL MOUNTING BUT INSTEAD A SO CALLED ALTAZIMUTHAL MOUNTING IN WHICH ONE OF THE AXES IS ALWAYS VERTICAL, WHEREAS THE OTHER LIES IN THE HORIZONTAL PLANE. SUCH A MOUNTING HAS NEVER BEEN USED BEFORE IN ANY COUNTRY. THE TELESCOPE CONSISTS OF TWO PRINCIPAL UNITS: SUPPORTING ROTATING AND TUBE. THE TUBE IS NOT AN ORDINARY CYLINDER WITH OPTICAL PARTS INSIDE, BUT A ROD CONSTRUCTION WITH SHAFTS AND RINGS ENSURING STABILITY OF CENTERING OF OPTICAL PARTS AND RIGIDITY OF THE ENTIRE INSTRUMENT. A HOLDER WITH THE MAIN MIRROR IS ATTACHED TO THE LOWER RING OF THE TUBE. THE UPPER RING WITH THE PRIMARY FOCUS AND THE OBSERVER'S CABIN IS CONNECTED TO THE LOWER RING BY MEANS OF UPPER AND LOWER SHAFTS. THE TUBE IS 27 M LONG AND WEIGHS ABOUT 275 TONS. UPON COMPLETION OF THE PREASSEMBLY EXAMINATION AT THE FACTORY, WHICH IS DESCRIBED HERE IN GREAT DETAIL, THE TELESCOPE WAS BROKEN DOWN INTO INDIVIDUAL COMPONENTS AND ASSEMBLIES, TAKING ADMISSIBLE SIZE OF INDIVIDUAL PARTS INTO ACCOUNT, FOR TRANSPORTATION BY RIVER.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--13NOV70

3/3 019

CIRC ACCESSION NO--AP0131770

ABSTRACT/EXTRACT--TELESCOPE COMPONENTS AND LARGE, HEAVY PIECES WERE LOADED ON A BARGE AT LENINGRAD AND TRANSPORTED ALONG THE VOLGA BALTIC AND VOLGA DON CANALS TO ROSTOV WHERE THEY WERE LOADED ONTO TRUCK PLATFORM TRAILERS. AT THE CONSTRUCTION SITE ASSEMBLY WAS WITH A 100 TON GANTRY CRANE. DIAGRAM OF BTA TELESCOPE. 1) REINFORCES CONCRETE FOUNDATION; 2) VERTICAL AXIS; 3) HYDROSTATIC SUPPORTS; 4) SPHERICAL RING; 5) PLATFORM; 6) SIMULATOR OF MAIN MIRROR AND MIRROR HOLDER; 7) LOWER RING; 8) LOWER SHAFTS; 9) SUPPORTS; 10) CENTRAL SUPPORT; 11) UPPER SHAFTS; 12) UPPER RING; 13) PRIMARY FOCUS; 14) OBSERVER'S CABIN.

UNCLASSIFIED

1/2 009 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--BRINES IN CRYSTALLINE ROCKS OF THE BALTIC SHIELD -U-

AUTHOR-(03)-GREYSER, YE.L., KOZLOV, V.B., PAVLOV, A.N.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. GEOL. 1970, (3), 141-3

DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--GEOGRAPHIC LOCATION, MINERAL DEPOSIT, SODIUM CHLORIDE, CALCIUM, SALT WATER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1439 STEP NO--UR/0011/70/000/003/0141/0143

CIRC ACCESSION NO--AP0130373

UNCLASSIFIED

2/2 009 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0130373

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BRINES, HAVING A TOTAL MINERAL CONTENT OF GREATER THAN 100 G-L., WERE FOUND RECENTLY IN THE TITLE ROCKS. THE WATERS WERE RELATED TO ZONES OF RELATIVELY ELEVATED FRACTURING WHERE FRACTURES WERE THIN AND EVIDENTLY DEVELOPED LOCALLY. THIS FEATURE WAS INDICATED BY A LOW DISCHARGE FROM THE DRILL HOLES. IN ALL DRILL HOLES, THE WATERS HAD PREDOMINANTLY OR ENTIRELY CHLORIDE COMPN. WITH HIGH CONTENTS OF NA AND CA. THE BALTIC SHIELD IS A PART OF THE CRYST. BASEMENT OF THE RUSSIAN PLATFORM. THEREFORE, ITS BRINES WERE COMPARED WITH SUBSURFACE WATERS OF THE BASEMENT. THE TOTAL MINERAL CONTENT OF WATER IN CRYST. ROCKS INCREASED WITH INCREASED DEGREE OF BASEMENT SUBMERGENCE, WITH THE COMPN. OF WATER BELOW THE 800-M DEPTH REMAINING ESSENTIALLY THE SAME AND PREDOMINANTLY OF NACL TYPE. IT IS DIFFICULT TO DET. THE MAGNITUDE OF SALINE WATER AND BRINE DISTRIBUTION IN THE ENTIRE CRYST. BASEMENT AND WITHIN THE BALTIC SHIELD IN PARTICULAR. IT IS POSSIBLE THAT SALINE WATERS AND BRINES WITH HIGH TOTAL MINERALS CONTENT ARE PRESENT ONLY IN THE WEATHERING PROFILE ON CRYST. ROCKS AND IN THE ZONE OF ELEVATED FRACTURING UNDER THE SEDIMENTARY MANTLE OF THE PLATFORM. IN THE BALTIC SHIELD, SALINE WATERS AND BRINES WERE PRESERVED PROBABLY ONLY IN AREAS ISOLATED HYDRODYNAMICALLY AS RELICTS OF ANCIENT STAGES. FACILITY: LENINGRAD. GIDROMETEOROL. INST., LENINGRAD, USSR.

UNCLASSIFIED

GREYSUKH, M.R.

USSR 539.23

6-13

V-4. KINETICS OF THE INITIAL GROWTH STAGE OF EPITAXIAL LAYERS

[Article by R. M. Abdurakhmanov, M. R. Greysukh, V. P. Pashkudenko, V. V. Kharchenko, Tashkent; Novosibirsk, III Simpozium po Protsessam Rosta i Svoystva Polupravodnikovykh Kristallov i Plenok, Russian, 12-17 June, 1972, p 54]

A study was made of the phenomenon of inconstancy of the silicon deposition rate during the growth process. The silicon growth kinetics in the initial stages where this phenomenon is observed were studied in a broad range of crystallization conditions (the deposition temperature, the $SiCl_4$ concentration and the flow rate). The experimental results show that the growth rate in the initial stages is higher than under steady-state conditions. The ratio of the silicon crystallization rate in the first and tenth minutes of deposition decreases with an increase in the $SiCl_4$ concentration, and for C_{SiCl_4} 0.15 percent it is 5.2 and for C_{SiCl_4} 6.0 percent it is 1.8. At a high deposition temperature, the establishment of the stationary growth rate takes place more rapidly.

The instrument analysis of the gas phase deposition with respect to thermal conductivity and with respect to infrared absorption spectra permitted estimation of the periods of nonstationarity of the vapor-gas mixture composition in the reactor in the case of admission and shut-off of silicon tetrachloride. On the basis of the data obtained, calculated estimates were made which demonstrated that the observed effect of inconstancy of the growth rate in the initial stages is not determined by the nonstationarity of the gas phase composition but is caused by the effect of surface properties of the substrate on the crystallization process.

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GREYSUKH, M.R.

X-3a. EFFECT OF THE CRYSTALLIZATION CONDITIONS ON THE TRANSFER OF PHOSPHORUS AND ANTIMONY IMPURITIES FROM THE SUBSTRATES INTO THE EPITAXIAL LAYERS OF SILICON

[Article by A. Sh. Iyatovich, Z. Kh. Khodzhaimedov, V. F. Pashkovskaya, V. F. Kharchenko, M. R. Greysukh, Sh. Ch. Shasaldov, Tashkent, Uzbekistan, USSR]

Simpozium po Tekhnologii Rosta i Svoystvam Epitaksial'nykh Sloyev Poluprovodnikovykh Materialov i Priborov na Ikh Osnove, Kuybyshev, 15-17 June 1972, p 128]

With the application of a layered radioactive analysis, studies were made of the distribution profiles of antimony and phosphorus in epitaxial layers of silicon as a function of the growth conditions. The epitaxial layers were obtained by the method of hydrogen reduction of silicon tetrachloride. The growth process temperature and the concentration of silicon tetrachloride were varied. The distribution profiles of the antimony and phosphorus can be satisfactorily described by diffusion equations with effective diffusion coefficients differing for different growth conditions. The relations between the diffusion coefficient in single crystals and found in our experiments depend essentially on the temperature, the growth rate and growth time.

With an increase in the growth rate the diffusion coefficients of both impurities increase for all crystallization temperatures (for the investigation temperature of 1,260°C, the variation takes place in the range of $5 \cdot 10^{-13}$ to $4 \cdot 10^{-10}$ cm^2/sec for phosphorus and $3 \cdot 10^{-12}$ to 10^{-10} cm^2/sec for antimony).

The values found for the diffusion coefficients as a function of the growth conditions of the layers can exceed the values known for single crystals. They can be equal and have smaller values.

JPRS 59208
6 May 73

GREYSUKH, M.R

X-16. CALCULATION OF THE ADMIXTURE PROFILES IN AUTOEPITAXIAL LAYERS

[Article by M. R. Greysukh, V. V. Kharchenko, Tashkent; Novosibirsk, III Simpozium po Protsessam Rosta i Tekhnologii Poluprovodnikovykh Kristallov i Plenok, Russian, 15-17 June 1972, p 130]

As a result of solving the problem of intrusion of the admixture profile during crystallization of the autoepitaxial layer from the gas phase considering its evaporation from the growing surface and the diffusion effect into the substrate, the formula was obtained for calculating the distribution profile of the admixture in the system made up of the autoepitaxial layer and the substrate. The formula obtained also permits investigation of the variation of the admixture concentration on the surface during the crystallization process and estimation of the time period during which it is established. On the basis of the solution obtained using a computer, a numerical calculation is made of the admixture profiles. It is demonstrated that for certain crystallization conditions, consideration of the inconstancy of the surface concentration of the admixture during the growth process is necessary.

The distribution profile of the admixtures transported into the epitaxial layer during the growth process from the opposite side of the substrate within the framework of the model considering evaporation was calculated. The dependence of the admixture profile on the nature of the admixture (the evaporation and diffusion coefficients) and the crystallization conditions was demonstrated. An estimate was made of the alloying level of the epitaxial layer by the substrate admixture for different conditions of crystallization and admixtures of different types.

1/2 026 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--BEHAVIOR OF CHALCOGENIDE INCLUSIONS DURING THE ANODIC DISSOLUTION OF COPPER AND NICKEL -U-

AUTHOR-(03)-GREIVER, T.N., ZAYTSEV, YU.A., KRYLOVA, M.S.

COUNTRY OF INFO--USSR

SOURCE--TSVET. METAL. 1970, 43(2), 10-12

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--COPPER, NICKEL, ELECTROLYTE, CORROSION RATE, SULFIDE, SODIUM CHLORIDE, SULFURIC ACID, SELENIDE, TELLURIDE, DISSOCIATION CONSTANT, OXIDATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0743 STEP NO--UR/0136/70/043/002/0010/0012

CIRC ACCESSION NO--AP0107285
UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0107285

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CORROSION BEHAVIOR OF SYNTHESIZED CHALCOGENIDE INCLUSIONS IN CU AND NI WAS STUDIED AT 25, 50, AND 650EGREES. THE ELECTROLYTE FOR THE CU DISSOLN. CONTAINED CU 40 AND H SUB2 SO SUB4 150 G-L.; FOR NI DISSOLN. THE ELECTROLYTE CONTAINED NI 60, NA SUB2 SO SUB4 60, NACL 50, AND H SUB3 BO SUB3 10 G-L (PH SIMILAR TO 3). FOR CU, THE OPEN CIRCUIT VOLTAGE WAS 0.10-0.15 V MORE POS. FOR THE CU CONTG. THE CHALCOGENIDE THAN IT WAS FOR PURE CU. THE POLARIZATION DECREASED IN THE SERIES CU SUB2 S GREATER THAN CUTE SUBO.8 GREATER THAN CU SUB2 TE GREATER THAN CUSE SUBO.8 GREATER THAN CU SUB2 SE AND DECREASED WITH TEMP. THUS, THE DEGREE OF OXIDN. INCREASED FROM SULFIDE SMALLER THAN TELLURIDE SMALLER THAN SELENIDE. IN MOST CASES THE DISSOLN. WAS LIMITED BY THE POLARIZABILITY OF THE CHALCOGENIDE (THE SULFIDE OR TELLURIDE); THE DEGREE OF CATHODIC CONTROL VARIED BETWEEN 70-100PERCENT. ONLY VERY SMALL CURRENTS FLOWED DURING DISSOLN. OF NI CONTG. NI SUB3 S SUB2, NI SUB3 SE SUB2, NISE, NI SUB2 TE SUB3 OR NITE.

UNCLASSIFIED

USSR

UDC 681.332.6

GREZDOV, G. I., and SIMAK, L. A., Institute of Cybernetics, Academy of Sciences of the Ukrainian SSR

"A Quasi-Analog Device for Solving a System of Ordinary Differential Equations"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 22, Aug 71, Author's Certificate No 309375, Division G, filed 23 Mar 70, published 9 Jul 71, p 193

Translation: This Author's Certificate introduces a quasi-analog device for solving a system of ordinary differential equations. The device contains analog modules for a system of derivatives, an analog module for a system of functions, and a penalty function shaper. The first group of inputs of this shaper is connected through a quasi-analog inverter module to direct and inverted input signal sources and to the inputs of the analog modules for the system of derivatives and the system of functions. As a distinguishing feature of the patent, the functional capabilities of the device are extended by including a matching unit

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USSR

GREZDOV, G. I., and SIMAK, L. A., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 22, Aug 71, Author's Certificate No 309375, Division G, filed 23 Mar 70, published 9 Jul 71, p 193

whose inputs are connected to the outputs of the analog modules for the system of derivatives and the system of functions, while the outputs of the matching unit are connected to the second group of inputs of the penalty function shaper.

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USSR UDC: 681.34.0

GREZDOV, G. I., GISHCHAK, K. I., KOSMACH, Yu. P., Institute of Cybernetics, Academy of Sciences of the Ukrainian SSR

"An Analog Computer Device for Hybrid Computers"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 8, Mar 71, Author's Certificate No 296131, division G, filed 21 Jun 69, published 12 Feb 71, pp 157-158

Translation: This Author's Certificate introduces an analog computer device for hybrid computers which contains a series hook-up comprised of a digital-analog converter and a quasianalog of the slope of a system of linear algebraic equations. As a distinguishing feature of the patent, the labor involved in solving a problem is reduced and reliability is increased by incorporating into the quasianalog of the slope of the system of linear algebraic equations an analog of a system of linear functions, a penalty function shaper, and a derivative shaper. The output of the analog of the system of linear functions is connected to the input of the penalty function shaper, the input of the analog of the system of linear functions is connected to the output of the digital-analog converter, and the input of the derivative shaper is connected to the output of the penalty function shaper.
1/1

USSR UDC 619:616--002.828--07(084)

SARKISOV, A. Kh., KOROLEVA, V. P., KVASHNINA, Ye. S., and GREZIN, V. F.
Diagnostika Gribnykh Bolezney (Mikozov i Mikotoksikozov) Zhivotnykh
(Diagnosis of Fungal Diseases -- Mycosis and Mycotoxicosis -- in Animals)

Moscow, "Kolos," 1971, 144 pp

Translation: Annotation: All types of fungal diseases found in farm animals are represented in this handbook. The agents of diseases are shown, laboratory diagnosis of pathogenic and toxic fungi are listed, and the clinical traits of the diseases and the pathological-anatomical changes they cause in animal organisms are given. The publication has more than 200 original illustrations.

The handbook is designed for veterinary specialists at kolkhozes and sovkhozes, workers at veterinary hospitals and laboratories, scientific workers, and students in the veterinary schools of institutes.

It is requested that suggestions and remarks be sent to: Moscow, Zh-472, VIEV, Laboratory of Antibiotics and Mycology.

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SARKISOV, A. Kh. et al., "Kolos," 1971, 144 pp

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SARKISOV, A. Kh., et al., "Kolos," 1971, 144 pp

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SARKISOV, A. Kh., et al., "Kolos," 1971, 144 pp

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USSR

ABDULSABIROV, R. Yu., GREZNEV, Yu. S., ZARIPOV, M. M., STEPANOV, V. G.,
Kazan' State University imeni V. I. Ul'yanov-Lenin

"Temperature Dependence of the Electron Paramagnetic Resonance Spectrum of Bivalent Manganese Cation in Cesium Sulfate"

Leningrad, Fizika Tverdogo Tela, Vol 14, No 6, Jun 72, pp 1816-1817

Abstract: The EPR spectrum of Mn^{2+} was studied in the temperature range of 4.2-300°K on a wavelength of 8 mm in Cs_2SO_4 crystals grown from an aqueous solution doped with about 1.5% $MnSO_4$. It was found that the Cs_2^+ ions replace the Mn^{2+} ions and that the excess positive charge is compensated by a vacancy in the position of the adjacent Cs_I^+. The angles calculated for the Cs_2^+-Cs_I^+ pairs with the a, b, and c axes were 71°10', 55°30', and 40°30' respectively. The temperature dependence of the EPR spectrum shows a phase transition of λ-type at 44±5°K. Confirmation of the type of phase transition will require studies of the temperature behavior of EPR spectra of isostructural crystals. The authors thank T. B. Bogatov for growing the crystals.

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1/2 012 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--ELECTRON PARAMAGNETIC RESONANCE OF CU PRIME2 POSITIVE IN POTASSIUM SULFATE -U-

AUTHOR-(03)-ABDUISABIROV, R.YU., GREZNEV, YU.S., ZARIPOV, M.M.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(2), 657-9

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--POTASSIUM SULFATE, COPPER, ELECTRON PARAMAGNETIC RESONANCE, CRYSTAL LATTICE STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0125 STEP NO--UR/0181/70/012/002/0657/0659

CIRC ACCESSION NO--AP0054921

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054921

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EPR SPECTRUM WAS INVESTIGATED OF CU PRIME2 POSITIVE IONS IN K SUB2 SO SUB4 (B) AT 77DEGREES K AT A WAVELENGTH OF 8 MM. THE SALT CRYSTALLIZES IN THE ORTHORHOMBIC SYSTEM AND BELONGS RO THE SPACE GROUP P NAM. THE SPECTRUM IS DUE TO 3 DIFFERENT TYPES OF PARAMAGNETIC CENTERS FORMED BY SUBSTITUTION OF K SUB2 POSITIVE (TYPE 2 CATIONIC SITE) BY CU PRIME2 POSITIVE IONS. ALL 3 TYPES CAN BE DESCRIBED BY THE ORTHORHOMBIC SPIN HAMILTONIAN WITH S EQUALS ONE HALVES AND I EQUALS THREE HALVES. PARAMETERS OF THE SPIN HAMILTONIAN WERE OBTAINED FROM THE ANGULAR DEPENDENCE AND ARE TABULATED. FORMATION OF THE 3 TYPES OF PARAMAGNETIC CENTERS CAN BE EXPLAINED BY CHARGE COMPENSATION WHICH TAKES PLACE ON SUBSTITUTION OF MONOVALENT ION WITH DIVALENT ION. THE EXCESS CHARGES OF CU PRIME2 POSITIVE IONS SUBSTITUTING FOR K SUB2 POSITIVE ARE COMPENSATED BY VACANCIES IN THE POSITION OF NEIGHBORING K SUB1 POSITIVE (TYPE 1 CATIONIC SITE).

UNCLASSIFIED

USSR

GRIB, A. A.; MOSTEPANENKO, V. M.; FROLOV, V. M. (Leningrad State University)

"Particle Production from a Vacuum by a Homogeneous Electric Field in Canonical Formalism"

Moscow, Teoreticheskaya i Matematicheskaya Fizika; December, 1972; pp 377-90

ABSTRACT: A study is made of particle production from a vacuum by a homogeneous electric field varying arbitrarily with time. Exact formulae are obtained for the probabilities of fermion and boson pair production by a method of diagonalization of the Hamiltonian with the aid of Bogolyubov transformations. These formulae are applied to particular cases. The vacuum of quasi particles for $t \to \infty$ is interpreted as a condensate of particle-antiparticle pairs with a total momentum equal to zero. Different classical characteristics of this condensate are examined.

The article includes 74 equations. There are 19 bibliographic references.

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USSR

UDC 533.601.155

GRIB, A.A., KOLTON, G.A., KUPCHINENKO, M.B.

"Hypersonic Gas Flow Past a Developing Surface"

Leningrad, Vestnik Leningradskogo Universiteta, No 1, 1971, pp 102-108

Abstract: A system of ordinary Vallander-Nikol'skiy differential equations for flows on a developing surface is reduced to a system of integral equations used for application of the iteration method for M_0 Mo 1. Taken as the zero approximation is the limiting case of rarefaction flow. The practical convergence of the iteration method is shown in some particular examples. 2 figures, 4 bibliographic entries.

1/1

USSR

GRIB, N. K., POLYAK, I. I.

"Program for Single-Level Objective Analysis by the Method of Optimal Interpolation"

Tr. Gl. Geofiz. Observ. [Works of Main Geophysical Observatory], No 289, 1971, pp 5-10, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V551 by the author's).

Translation: An algorithm and program are presented for single-level objective analysis of meteorological fields. The algorithm is realized as a procedure in TA-1M translator input language and allows studies to be performed in order to produce various statistical estimates.

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UDC 632.95

USSR

ABRAMOVA, K. A., KHASKIN, I. G., RUDNEV, G. K., SHIRANKOV, D. E., SHOMOVA, YE. A., GRIB, O. K., KUPRINA, ZH. S.

"Pesticide"

USSR Author's Certificate No 252756, filed 10 Jul 68, published 12 Feb 70 (from RZh-Khimiya, No 18, 25 Sep 70, Abstract No 18N665 P, by P. V. Popov)

Translation: Esters of alpha-chlorocinnamic acid with general formula $PhCH{=}CClC(O)OR$ (I) (R = Me, Et, or Ph) exhibit fungicidal and herbicidal properties. In toxicological experiments I (R = Me or Et) suppressed development of colonies of Alternaria, Botrytis, Cladosporium, Penicillium, Rhizoctonia, and Verticillium on potato-dextrose agar in most cases no less vigorously than did Figon and TMTD /tetramethylthiuram disulfide/. As herbicides, I (R = Me or Ph) act selectively on dicotyledonous plants (beans, sunflower, buckwheat, beet, and mustard); winter wheat and oats of the cereal crops are resistant, corn is the most sensitive.

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AA0051768

GRIB, U.S.
UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent, 1/70

237018 REMOTE SUB-SURFACE PIEZOGRAPH, for use in well-logging and especially for determining the level of liquid in an oilwell, consists of a vertical torpedo-shaped container, to which power supply and signalling cables as well as the raising/lowering cable, can be fixed and which incorporates an internal float which has a horizontal aperture through it. One side of the container contains a source of light (4) connected electrically as the circuit diagram shows. This light is free to shine through the horizontal aperture so that it falls on either of 2 light-sensitive elements (6 and 7) connected to the same circuit via the diodes of opposite polarity (5). The remainder of the circuit consists of the transformer (10) filter (11), amplifier (12), reversing motor (13) and indicating and recording device (14). As the container is lowered gradually into the well, the level of

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liquid firstly corresponds with the position indicated by element (7) and then the level reaches element (6). Thenboth elements go dark because the light has been cut off. By knowing the length of the cable the depth of the level of liquid down the well can be determined, by the signals which return up the cable.

27.3.67 as 1143915/18-10. A.A.KOL'TSOV & OTHERS. (16.6.69) Bul 7/3.2.69. Class 74b, 5a. Int.Cl.G 08c, E 21b.

AUTHORS: Kol'tsov, A. A.; Grib, V. S.; Veshchev, O. N.

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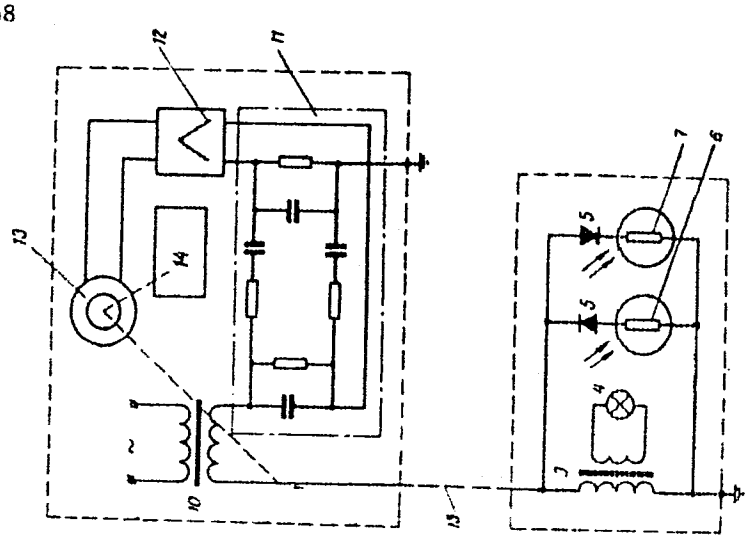

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USSR

UDC 621.762:669.018.24(088.8)

AL'TMAN, A. B., GLUSKIN, Ya. A., GRIB, V. V., ZALMANOV, Yu. S., MEMELOV, V. L.

"Metal Ceramic Antifriction Material"

USSR Author's Certificate No 316738, filed 2/04/70, published 14/12/71, (Translated from Referativnyy Zhurnal, Metallurgiya, No 5, 1972, Abstract No 5 G497 P).

Translation: A material based on Co is suggested, containing a solid lubricant. In order to increase the mechanical and antifriction properties in the dry friction mode, Ag is introduced with the following ratio of components (in %): Ag 5-20, solid lubricant 5-15, Co -- remainder.

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USSR

UDC 591.488.4-135.044:597.82

VINNIKOV, Ya. A., GAZENKO, O. G., TITOVA, L. K., GOVARDOVSKIY, V. I., GRIBAKIN, F. G., BRONSHTEYN, A. A., PEVZNER, R. A., ARONOVA, M. Z., MASHINSKIY, A. L., PAL'MBAKH, L. R., IVANOV, V. P., TSIRULIS, T. P., KHARKEYEVICH, T. A., and PYATKINA, G. A., Laboratory of Evolutional Morphology, Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, Academy of Sciences USSR, Leningrad

"Development of the Vestibular Apparatus (Labyrinth) of the Frog Rana temporaria in Weightlessness"

Leningrad, Zhurnal Evolyutsionnoy Biokhimii i Fiziologii, Vol 8, No 3, May/Jun 72, pp 343-350

Abstract: To study the effect of weightlessness on development of vertebrate vestibular apparatus, 43-hour artificially fertilized Rana temporaria eggs were subjected to a 40-hour flight in the Soyuz-10, after which they were fixed and observed with an electron microscope. Embryos in the early gastrula stage were used to ensure that takeoff acceleration was experienced prior to establishment of definitive vestibular apparatus, in light of evidence that acceleration does have considerable impact on receptor cell development at the later stages. Normal development proceeded to the tail bud stage during

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201020002-2"

USSR

VINNIKOV, Ya. A., et al., Zhurnal Evolyutsionnoy Biokhimii i Fiziologii, Vol 8, No 3, May/Jun 72, pp 343-350

the flight, as it did in control embryos, and no differences were detected in development of the presumptive otocysts and the eighth ganglion. Morphology is described in detail, the main feature being the beginning of differentiation of receptor and support cells in the presumptive otocysts and of bipolar neuroblasts in the eighth ganglion. Thus weightlessness has no effect on development in general and on differentiation of the future vestibular apparatus in frog embryos.

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1/2 019 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--CONTRIBUTION OF ANHARMONICITY IN A COULOMBIC SUBSYSTEM TO TWO PHOTON ABSORPTION -U-

AUTHOR-(02)-GRIBAN, V.N., OVANDER, L.N.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(2), 448-54

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LIGHT ABSORPTION, IONIC CRYSTAL, COULOMB INTERACTION, OPTIC TRANSITION, MATRIX ELEMENT, EXCITON, TRANSITION PROBABILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/1613 STEP NO--UR/0181/70/012/002/0448/0454

CIRC ACCESSION NO--AP0054463

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0054463

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONTRIBUTION WAS CONSIDERED OF THE OPERATOR OF INTERMOL. INTERACTION TO 2 PHOTON EXCITON ABSORPTION OF LIGHT. COMPONENTS OF COULOMBIC ANHARMONICITY RESPONSIBLE FOR THIS CONTRIBUTION WERE OBTAINED IN TERMS OF THE THEORY OF POLARITONS. THE MATRIX ELEMENT OF THE TRANSITION DEPENDS ON THE DIRECTIONS OF THE WAVE VECTORS OF POLARIZATION AS WELL AS ON THE DIRECTIONS OF THE WAVE VECTORS OF RADIATION FLUXES IN THE CRYSTAL, WHICH DIFFERENTIATES IT FROM THE MATRIX ELEMENT OBTAINED FROM THE OPERATOR OF ELECTRON PHOTON INTERACTION. INVESTIGATION WITH THE AID OF GROUP THEORY SHOWED THAT 2 PHOTON ABSORPTION, DETD. BY COULOMBIC ANHARMONICITY FOR CERTAIN DIRECTIONS OF THE WAVE VECTORS AND POLARIZATION VECTORS IN A SERIES OF CASES CAN BE SEPTD. FROM 2 PHOTON ABSORPTION DETD. BY ELECTRON PHOTON INTERACTION. POSSIBILITY OF SUCH SEPN. DEPENDS ON THE CRYSTAL CLASS AND THE TYPE OF EXCITON STATE. A SERIES OF CASES WERE CONSIDERED IN DETAIL AND THE TABLES ARE GIVEN OF THE ANGULAR DEPENDENCES OF THE PROBABILITY OF THE PROCESS. THIS REPRESENTS A POSSIBLITY OF DIRECT EXPTL. VERIFICATION OF THE RELATIVE ROLE OF COULOMBIC ANHARMONICITY IN 2 PHOTON ABSORPTION OF LIGHT. FACILITY: NEZHIN. GOS. PEDAGOG. INST. IM. GOGOLYA, NEZHIN, USSR.

UNCLASSIFIED

USSR UDC 616-008.922.1.04-092.9-085.832.9-07:616.43-008.939.15-074

GRIBANOV, G. A., Department of Biochemistry, Kalinin Medical Institute

"The Effect of 'Hypoxic' Hypothermia on the Metabolism of Phospholipids of the Endocrine Organs of Rats in Chronic Hypoxic Hypoxia"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 72, No 9, Sep 71, pp 42-44

Abstract: Tests were carried out on three grouped rats: (1) a control group; (2) rats subjected to the effect of chronic hypoxic hypoxia; and (3) rats subjected to the combined effect of chronic hypoxic hypoxia and the thermal factor. After the animals were sacrificed, the content of lipid phosphorus was determined in the excised thyroid and adrenal glands and testes. Chronic hypoxia has resulted in diminished weight of the thyroid and testes, and an increase in the weight of the adrenals. The total amount of phosphatides in the rats subjected to hypoxia increased in the thyroid, decreased in the testes and remained unchanged in the adrenals. With the combined effect of chronic hypoxia and the thermal factor, the weight of the thyroid and testes decreased to a lesser degree than with chronic hypoxia alone, while the weight of the adrenals increased more than with hypoxia alone. The total amount of combined phospholipids in the thyroid and adrenals was 1-½ - 2 times greater
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USSR

GRIBANOV, G. A., Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 72, No 9, Sep 71, pp 42-44

than in rats under the effect of hypoxia alone, and in the testes did not differ from the control group but was higher than after hypoxia alone. The intensity of incorporation of isotope (P^{32}) into the phospholipids of the thyroid and testes increased 5 and 10 fold respectively as compared to the control group, and 5-6 times as compared to chronic hypoxia. The inhibiting action of natural hypothermia, proven under conditions of acute hypoxia for the cerebral cortical tissue, under the conditions of chronic hypoxia is characteristic of adrenals alone, and not of the thyroid or testes.

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Acc. Nr. AP0036334 Abs CHE

ervice: .4-70

Ref. Code UR 0068 4

G

69309z Welding conditions and corrosion resistance of welded seams. Klochkov, A. I.; Emel'yanova, V. P.; Dobrovolskii, I. P.; Koval, A. B.; Gribanov, L. F.; Grigor'ev, N. P.; Kushev-skii, O. S.; Shchapova, V. V. (Chelyabinsk. Politekh. Inst., Chelyabinsk, USSR). *Koks Khim.* 1970, (1), 50–2 (Russ). The corrosion resistance of welds depends on the type of the welding process applied, on the electrode type, on the compn. of additives, on addnl. thermal treatment, and on the cooling of the seam. For min. corrosion in connections and app. for sulfate plants the following procedure is recommended: in arc welding the *A*-type electrode (C 0.11, Mn 0.9–1.5, Si 0.6–1.1, Cr 16.5–19.5, Ni 7.8–10.0, Mo 1.7–1.5, S 0.02 and P 0.03%) should be preferentially used with Mo as additive. The max. current intensity is 110 A for the welding in Ar atm. with addnl. rod of 1Kh18N9T steel (C ≤ 0.12, Mn 1—2, Si ≤ 0.80, Cr 17–19, Ni 8–0.5, Ti (C −0.02) × 5–0.7, S ≤ 0.02, P ≤ 0.035%).

Z. Sterbacek

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REEL/FRAME 19721172

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USSR

UDC 539.3

GRIBANOV, V. F.

"Concerning Some Problems of Local Shell Stability"

Kiev, Prikladnaya Mekhanika, No 9, 1970, pp 31-38

Abstract: A method is presented for solving problems of the local stability of cylindrical and spherical shells with the joint action of heating and external loads, with account taken of the subcritical deformation of the middle surface up to loss of stability. For the four problems under consideration, determination of the critical temperatures and loads is reduced to seeking out the eigen-values of integral equations with symmetrical kernels, which are nonlinear functions of the parameters (temperature and load). Ways of determining the smallest eigen-values of the integral equation are given.

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USSR

UDC 519.55

GRIBANOV, YU. I.

"Linear Operators in Complete Functional Spaces, II"

Kazan', Izvestiya Vysshikh Uchebnykh Zavedeniy -- Matematika, No. 8, Aug 70, pp 48-58

Abstract: The general properties of arbitrary integral operators acting in complete functional spaces are studied. Criteria are presented for the representability of a linear operator in integral form and for the representability of an operator that is the dual of an integral operator in integral form. It is noted that these are new results for Lebesgue-Riesz spaces L^p. An integral operator is defined as an operator of the type

$$Au = (Au)(s) = \int_X K(s, t)u(t)d\mu(t) = (u, K_s): \qquad (1)$$

i.e., a linear integral operator. An operator B is called a ν-majorant for the operator A if the operator B transforms nonnegative functions into nonnegative functions and if the function $|Au| \leq B|u|$ is ν-almost everywhere for any

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USSR

GRIBANOV, YU. I., Izvestiya vysshikh uchebnykh zavedeniy -- Matematika, No. 8, Aug 70, pp 48-58

function $u \in E_0$. The following theorem is proved: For a linear operator A from a normal vector space E_0 of a complete functional space E in $S(Y, \nu)$ to be representable in the integral form (1), it is necessary and sufficient that the following conditions be fulfilled: (a) the operator A has a ν-majorant B; (b) it follows from $E_0 \ni u_n \to 0$ that $Au_n \to 0$ is ν-almost everywhere; (c) if the sequence of sets $X_n \to X$, $\chi_{X_n} \in E_0$, for any $n \geq 1$ and for ν-almost each S, $l_{nS}(u) = (AP_{X_n} u)(S)$ is a weakly continuous functional in $L^{\infty}(X, \mu)$.

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USSR

NIKOLAYEV, A. V., GRIBANOVA, I. N., KHOL'KINA, I. D., NORTSEVA, A. A., MANATYUK, T. V.

"Phosphorus and Sulfur-Containing Sorbents. V. Organothiophosphorus Sorbents"

Novosibirsk, Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSR -- Seriya Khimicheskikh Nauk, No 1, 1973, pp 79-83

Abstract: Data are presented on the synthesis, physical-chemical evaluation and sorptive power of organothiophosphorus sorbents -- cation-exchange resins and "mixed" complexites.

Two types of phosphorus and sulfur-containing sorbents were synthesized. The first type were cations with the functional group $-P(S)(OH)_2$. The sorbents of the second type were "mixed" complexites containing the cation-exchange functional groups and $-P(S)(OR)_2$ where R are alkyls. The physical-chemical characteristics and sorptive powers of the synthesized sorbents are given with special attention to the selectivity of the sorbents and their sorptive power with respect to extracting gold from acid solutions.

The "mixed" complexites were distinguished by a somewhat reduced sorption rate apparently as a result of an increase in steric factors. For the cation-exchange resins a small reduction in the degree of sorption of gold was

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201020002-2"

USSR

NIKOLAYEV, A. V., et al., Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSR -- Seriya Khimicheskikh Nauk, No 1, 1973, pp 79-83

observed with an increase in the hydrochloric acid concentration in the aqueous phase; for the "mixed" complexites there was some increase in the degree of sorption in the 0.5-3.0 normal HCl range.

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USSR UDC 541.183.24

GRIBANOVA, I. N., KHOL'KINA, I. D., POLOVINKIN, YU. N., and NIKOLAYEV, A. V., Institute of Inorganic Chemistry, Siberian Branch, Academy of Sciences USSR

"The Radiation-Chemical, Chemical, and Mechanical Stability of Porous Organophosphorus Cation Exchangers"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, No 7, Jul 70, pp 1752-1755

Abstract: The stability of organophosphorus cation-exchange resins derived from styrene-divinylbenzene copolymers ("phosphonic" resins) under the action of gamma-rays during irradiation in H_2O, 2N HNO_3, and air was studied. Changes in the adsorption capacity for Na^+ and UO_2^{++} upon irradiation and in other properties were determined. The radiation stability of the porous resins was higher than that of the non-porous. It increased with increasing degrees of cross-linking. The higher stability of porous resins, which had a higher content of divinylbenzene, was due to greater possibilities of structurization counteracting decomposition during irradiation. The porous resins also had a higher resistance to the action of acids (5N HNO_3 and 5N H_2SO_4) in tests continued for 1.5-3 mos.
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USSR

GRIBANOVA, I. N., et al., Zhurnal Fizicheskoy Khimii, Vol 44, No 7, Jul 70, pp 1752-1755

The detachment of active groups took place mainly by cleavage of C-C, not C-P bonds. The mechanical strength of the resins, which was determined by grinding tests, depended on the density of cross-linking and the thickness of walls between pores. The data obtained on the resins are tabulated in relation to the content of divinyl-benzene in the resins and the amount of iso-octane used in their synthesis. The authors thank N. YR. BUYANOVA for her assistance in the experiments.

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USSR

UDC 661.718.1

GRIBANOVA, I. N., Candidate of Technical Sciences, and KHOL'KINA, I. D.

"Organophosphorus Complexites and Their Use in the Separation and Refining of Metals"

Moscow, Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva imeni D. I. Mendeleyev, Vol 15, No 4, 1970, pp 420-425

Translation: A study is made of the synthesis and sorption properties of organophosphorus complexing resins (complexites). According to the structure of the active group, complexites are divided into cation exchange resins, polyester resins, and mixed organophosphorus complexing resins. Methods of synthesis and their characteristics are given for each group of organophosphorus complexing resins.

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USSR

UDC 57.086.82:621.397.13

GRIBANOVSKIY, I. B., GUSEYNOV, A. M., and CHERNUKH, A. M., Institute of Normal and Pathological Physiology, Academy of Medical Sciences USSR, Moscow

"Television Microscopy as a Method of Vital Microscopy"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, No 6, Nov/Dec 71, pp 78-81

Abstract: A television camera attached to a light microscope and functioning as a scanning device yields a picture of many advantages, due to the fact that the transmitting tubes are highly sensitive to visible light and to ultraviolet and infrared rays. As a result, by illuminating the object with short wave light, the resolving power of the microscope is magnified. By using monochromatic light of appropriate wavelength, objects indiscernible in regular light become visible on the television screen. By electronic magnification of the contrast, the image on the television screen can be magnified four times beyond the magnification of the microscope, without loss in resolution. Finally, the information about the object under investigation is transformed into electronic impulses which can be processed mathematically.

1/1

USSR

UDC 539.3.01

TUL'CHIY, V. I., BUDAK, V. D., GRIBICH, N. G., SYPKO, V. P.

"On Determining the Stress Concentration at Danger Points of Plate-Bands With Rounding Off"

V sb. Kratk. tezisy dokl. k Konf. po povrezhdeniyam i ekspluat. nadzhnosti sudovykh konstruktsiy, 1972 (Brief Summaries of Papers at the Conference on Damages and the Operational Reliability of Ship Designs, 1972 -- Collection of Works), Vladivostok, 1972, pp 93-97 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V55)

Translation: Experimental graphs showing the relationship between the stress concentration coefficient and the geometric parameters of the weakening elements are shown for three elongated bands weakened by an opening and various types of punchings. The photoelasticity method was used to conduct the study on the coordinate-synchronous polarimeter KSP-7. The models were made of epoxy resin ED-5 and were subjected to uniaxial uniformly distributed stress. N. T. Glazunova.

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USSR

BASOV, N. G., BOYKO, V. A., GRIBKOV, V. A., ZAKHAROV, S. M., KROKHIN, O. N., and SKLIZKOV, G. V., Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR

"Gas Dynamics of a Laser Plasma in the Process of Heating"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 61, No 1(7), Jul 71, pp 154-161

Abstract: One of the two well-known approaches to the problem of heating plasma to thermonuclear temperatures by irradiating it with a laser is the method in which a substantial portion of the energy of the laser is converted into the energy of directed, gas-dynamic movement. In the present article, an attempt is made for the first time to measure the distribution of the density and speed of movement of the plasma, to evaluate the pressure of the plasma during the process of heating. A multimode, Q-switched laser and a carbon target were used, and measurements were made by slit scanning of an interferogram on an image converter. It was found that the maximum pressure (10^6 atmospheres) and temperature occur at the beginning of the laser pulse. At later times, the profile of the density is elevated, and the area of the

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USSR

BASOV, N. G., et al., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 61, No 1 (7), Jul 71, pp 154-161

plasma in which absorption takes place draws back from the target and increases. The mass of the gas heated directly by the laser beam also increases. The temperature in the hot portion drops, and an increasingly greater part of the radiation energy is converted directly into the kinetic energy of the disintegrating substance. In this manner, by varying the dependence of the dispersion of the radiation on time, it ispossible to shift the maximum pressure and to achieve optimal utilization of the laser's energy when heating plasma under real conditions.

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1/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--PHOSPHORESCENCE OF MOLECULAR CRYSTALS DURING PULSED EXCITATION -U-

AUTHOR-(02)-ZHEVANOROV, N.D., GRIBKOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(3), 557-61

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--PULSE EXCITATION, PHOSPHORESCENCE, SINGLE CRYSTAL, BENZENE DERIVATIVE, AROMATIC HYDROCARBON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2025 STEP NO--UR/0048/70/034/003/0557/0561

CIRC ACCESSION NO--AP0125613

UNCLASSIFIED

2/2 026 UNCLASSIFIED

CIRC ACCESSION NO--AP0125613 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF EXCITATION ENERGY ON THE PHOSPHORESCENCE OF DIBENZYL AND DIPHENYLFLUORANTHENE SINGLE CRYSTALS WAS STUDIED. THE PHOSPHORESCENCE POLARIZATION WAS INDEPENDENT OF THE EXCITATION ENERGY. THE ROLE OF TRIPLET TRIPLET ANNIHILATION AND THE MECHANISM OF ENERGY MIGRATION BETWEEN IDENTICAL MOLS. ARE DISCUSSED.

FACILITY: FIZ. INST. IM. LEBEDEVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 548.52

PORTNOY, K. I., GRIBKOV, V. N., SHCHETANOV, B. V., UMANTSEV, E. L., SILAYEV, V. A.

"On the Mechanism of Growth and Etching of Aluminum Nitride Whiskers"

Moscow, Kristallografiya, Vol 18, No 3, May/Jun 73, pp 599-604

Abstract: An investigation is made of the influence of iron impurities on the growth of aluminum nitride whiskers in the process of carbon reduction of aluminum oxide in a nitrogen atmosphere in accordance with the reaction $Al_2O_3 + 3C + N_2 = 2AlN + 3CO$. It is established that the presence of iron is a decisive factor in growth of the crystals. While it does not participate in the process of aluminum oxide reduction, the iron promotes whisker growth by the vapor - liquid - solid phase mechanism, acting as an aluminum and nitrogen solvent. It is shown that with insufficient aluminum in the gaseous phase, the reverse process of nitride whisker evaporation may take place by the solid phase - liquid - vapor mechanism with the iron acting as a solvent.

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USSR

UDC 546.623'171.1-162.2

TIMOFEYEVA, N. I., MORDOVIN, O. A., GRIBKOV, V. N., and SAKOVICH, V. N.

"Chemical Properties of Thread-Like Crystals in Aluminum Nitride"

Moscow, Zhurnal Prikladnoy Khimii, Vol 45, No 8, Aug 72, pp 1858-1860

Abstract: The thread-like crystals of AlN were obtained by partial reduction of aluminum oxide with carbon and silicon followed by nitridation of the intermediate reduction products. The crystals of aluminum nitride are highly stable at room temperature in acids, bases, in water, and in organic solvents. On heating they dissolve in phosphoric acid, in KOH and in Na_2CO_3 solutions, as well as in mixtures consisting of H_3PO_3+ $HClO_4$ (1:1) and H_2SO_4 + H_3PO_4 (1:1).

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USSR

UDC 536.421/422/423:620./8

GRIBKOV, V. N., ISAYKIN, A. S., SHCHETANOV, B. V., UMANTSEVA, E. L., and MUKASEYEV, A. A., Moscow

"Vapor-Liquid-Solid Mechanism of Filamentary Crystal Growth of High-Melting Metals"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 3, May/Jun 73, pp 62-67

Abstract: Growing SiC whiskers from $SiCl_4$ or $SiHCl_3$ at 1300-1500°C showed that whiskers are produced only in those cases when free silicon is condensed within the growth zone. If changes in temperature or in the composition of mixtures $SiCl_4:H_2$ or $SiHCl_3:H_2$ were such that the condensation of Si was prevented, whiskers were not produced. When temperature decreased below 1430°C (i.e., below the m.p. of Si) the whisker growth was terminated. Metal-like drops were observed at the top of all whiskers when the ratio of $F'_{Si}/F_C - F'_C$ was sufficiently large (F and F' represent the concentration of atoms of corresponding elements in the gaseous phase and those evaporating from the liquid metal drop, respectively). X-ray diffraction analysis of these drops showed that they consisted of silicon. When the above ratio was optimal, whiskers up to 30 mm long and from 0.1 to 0.3 μm in diameter were grown. In the presence of aluminum, SiC whiskers were grown successfully at 1200-1600°

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USSR

GRIBKOV, V. N., et al, Moscow, Fizika i Khimiya Obrabotki Materialov, No 3, May/Jun 73, pp 62-67

and were 20-30 mm long and 1-5μm in diameter. Droplets at the end of these whiskers consisted of Al-Si; in many cases the concentration of Al was 95-100%. The addition of Fe and Ni also intensified the growth of SiC whiskers. Droplets at the ends of these whiskers consisted of Fe-Si and Ni-Si. In the presence of these elements, whiskers were grown successfully at temperatures above 1350°C for nickel and 1400-1420°C for iron. In experiments with α-Al_2O_3 whiskers the necessary condition for growth was the presence of Si, SiO_2, or Fe_2O_3 in the reaction zone. Thus, aluminum, iron, and nickel can serve as additives for the growth of SiC whiskers. In the case of α-Al_2O_3 additives can be either silicon or iron.

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USSR UDC 548.522

ISAYKIN, A. S., GRIBKOV, V. N., SHCHETANOV, B. V., SILAYEV, V. A., and LEVINSKAYA, M. KH.

"Growth of Filamentary Aluminum Oxide Crystals During Reduction of Aluminum Oxide"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 1, Jan/Feb 73, pp 112-119

Abstract: Thermodynamic analysis of aluminum oxide reduction by hydrogen and carbon showed that Al_2O produced the highest pressure among the gaseous reaction products and that Al_2O was primarily responsible for the mass transfer in the gaseous phase. A participation of aluminum vapors in this process was determined by the pressure of CO vapors within the reduction zone of alumina. Reduction of Al_2O_3 by C and H produced mainly Al_2O and Al, and the pressure of Al_2O was three times as high when the reduction was accomplished by carbon. A difference in temperatures between reduction and condensation zones of the order of 200-300°C produced a supersaturation equaling 10. Corundum whiskers were successfully grown in the presence of hydrogen when the difference in temperature between reduction and condensation zones was 60-80°C. A rapid growth of whiskers was observed at 2000-2050°C in the reduction zone when this temperature difference amounted to 150°C and the

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201020002-2"

USSR

ISAYKIN, A. S., et al, Moscow, Fizika i Khimiya Obrabotki Materialov, No 1, Jan/Feb 73, pp 112-119

supersaturation was S≈5. The diameter of whiskers in this case was 10-30μ and they were 20-25 mm long. When the difference in temperature between zones was 200-220°C, the whiskers were 1-10μ in diameter and 6 mm long, but they had many defects. The whiskers were of irregular shape and very small when the temperature difference was 250-280°C. A condensation of aluminum droplets in the growing zone of whiskers led to the conclusion that the initial crystallization centers originated in these droplets and the growth of corundum whiskers in this process took place according to the vapor - liquid - solid phase mechanism.

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USSR UDC: None

GRIBOV, V. N., Leningrad Institute of Nuclear Physics

"Characteristics of the Pomeranchuk Band; Diffraction Dispersion and Asymptotic Equality of Full Cross Sections"

Moscow, Yadernaya Fizika, vol 17, No 3, 1973, pp 603-613

Abstract: In earlier papers it has been shown that for self-consistency of the description of constant, full cross sections by means of the Pomeranchuk band, it should be considered that the amplitudes of any processes resulting from the exchange of one such band go to zero with zero transverse transmitted impulse, except for amplitudes of purely elastic dispersion. The present paper shows that for this type of impulse, the amplitudes of any inelastic processes should drop with increases in energy. The author also explores the analogy between this phenomenon and the diffraction dissociation phenomenon in dispersion from an object of large radius. It is noted that one of the earlier papers referred to above was written by the author of the present article in collaboration with O. V. Kancheli but has not been published. The author expresses his gratitude to O. V. Kancheli, L. N. Lipatov, Ye. M. Levin, K. A. Ter-Martirosyan, and A. B. Kaydalov.
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Aluminium and Its Alloys

USSR UDC 548.522:546.621.21

GRIBKOV, V. N., ISAYKIN, A. S., UMANTSEV, E. L., and SHCHETANOV, B. V.

"Growth of α-Al_2O_3 Whiskers During Oxidation of Aluminum"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, No 7, 1972, pp 1249-1255

Abstract: Although the method of production of α-Al_2O_3 whiskers during oxidation of aluminum in moist hydrogen has been known for some time, a great deal remains unclear in the process. It has been assumed that mass transfer is conducted by the oxides Al_2O or AlO, formed by interaction of liquid aluminum with moisture. Later it was found that growth occurs only in mullite ceramic, containing SiO_2. It was therefore assumed that the aluminum is oxidized not by moisture, but by silicon monoxide. However, no experimental proof has been conducted. Therefore, this work studied the role of SiO_2 and its influence on growth, composition, and many other parameters. Whiskers were grown at 1,000-1,500°C in hydrogen with dew point between between 0 and - 55°C. Aluminum chips with purity 99.9999% were used. It was found that the growth of α-Al_2O_3 whiskers in the process of oxidation of aluminum in moist hydrogen, when grown in mullite ceramic, occurs by the mechanism vapor-liquid-solid phase by crystallization of aluminum oxide from liquid drops of alloys of aluminum with silicon and iron.

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USSR UDC 548.52

GRIBKOV, V. N., SILAYEV, V. A., SHCHETANOV, B. V., UMANTSEV, E. L., and ISAYKIN, A. S.

"Peculiarities of the Growth Mechanism of Silicon Nitride Whiskers"

Moscow, Kristallografiya, Vol 16, No 5, Sep-Oct 71, pp 982-985

Abstract: The authors studied the growth conditions and mechanism of α-Si_3N_4 whiskers grown by the reaction of silicon dioxide with silicon at 1350-1480° C in an atmosphere of nitrogen containing about 1 percent hydrogen, with special emphasis on the role of mullite. It was found that mullite is the best substrate for α-Si_3N_4. In the absence of mullite, whisker growth occurs only if iron or aluminum impurities are present in the initial charge or are introduced into the growth zone. Under these conditions deposition proceeds by a vapor-liquid-solid phase mechanism with the participation of drops consisting of aluminum-silicon, iron-silicon, or iron-aluminum-silicon alloys, while crystallization from the liquid phase proceeds by an axial screw dislocation mechanism.

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Aluminum and Its Alloys

USSR

UDC 546.171.1'621

PORTNOY, K. I., GRIBKOV, V. N., ISAYKIN, A. S., SHCHETANOV, B. V., and LEVINSKAYA, M. KH.

"The Role of Liquid Drops in the Growth of Aluminum Nitride Whiskers"

Moscow, Izvestiya Akademii Nauk SSSR -- Neorganicheskiye Materialy, Vol 6, No 10, Oct 70, pp 1762-1767

Abstract: No theoretical or experimental proof has yet been obtained as to the possibility of the growth of refractory-compound whiskers by the "vapor-liquid-solid phase" mechanism, and there are contradictory views concerning the role of liquid drops in their growth. Therefore, the authors undertook to elucidate the need for the presence of liquid drops for the growth of refractory-compound whiskers, as well as to study the mechanism of their participation in such growth. Aluminum nitride whiskers were used for the study. The whiskers were grown by two methods, viz. (1) reduction of aluminum oxide in the presence of nitrogen and (2) nitriding of aluminum. Experiments showed that the growth of the AlN whiskers according to both reactions is always

USSR

PORTNOY, K. I., et al., Izvestiya Akademii Nauk SSSR -- Neorganicheskiye Materialy, Vol 6, No 10, Oct 70, pp 1762-1767

accompanied by the formation of "drops." Electron diffraction and X-ray studies showed that the composition of the "drops" was identical to that of the whiskers, i. e.,they were spheres of aluminum nitride. Condensation of liquid aluminum drops is a necessary condition for the growth of AlN whiskers. It is unlikely that whiskers of AlN and other similar compounds grow by the "vapor-liquid-solid phase" mechanism. It is more probable that the aluminum drops are crystallization centers.

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1/2 052 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--NORMAL ELASTIC MODULUS OF CERAMIC WHISKERS -U-

AUTHOR-(03)-GRIBKOV, V.N., MUKASEYEV, A.A., SHCHETANOV, B.V.

COUNTRY OF INFO--USSR

SOURCE--PORSHKOVAYA MET., MAR. 1970, (3), 84-88

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, METHODS AND EQUIPMENT, PHYSICS

TOPIC TAGS--SINGLE CRYSTAL, TEST METHOD, NONDESTRUCTIVE TEST, WHISKER CRYSTAL, CERAMIC, ULTRASONIC VELOCITY, ELASTIC MODULUS/(U)ALN CERAMIC WHISKER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0625 STEP NO--UR/0226/70/000/003/0084/0088

CIRC ACCESSION NO--AP0134387

UNCLASSIFIED

2/2 052 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0134387
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD OF DETERMINING THE NORMAL ELASTIC MODULUS OF CERAMIC WHISKERS (ALN AND OTHER ANALOGOUS MATERIALS) BY REF. TO THE VELOCITY OF LONGITUDINAL ULTRASONIC WAVES IN THEM IS DESCRIBED, AND SOME PRACTICAL EXAMPLES ARE PRESENTED. THE NORMAL ELASTIC MODULUS OF ALN WHISKERS SO DETERMINED EQUALS 30000-33000 KG-MM PRIME2, AS OPPOSED TO 35000 KG-MM PRIME2 IN A MASSIVE SINGLE CRYSTAL, MEASURED IN THE SAME CRYSTALLOGRAPHIC DIRECTION.

UNCLASSIFIED

USSR

POKHMOV, K. I., and GRIBKOV, V. N., All-Union Scientific Research Institute of Aviation Materials

"Growth of AlN Whiskers during Aluminum Nitriding"

Kiev, Poroshkovaya Metallurgiya, No 5, May 70, pp 10-14

Abstract: Investigations were conducted of the process and conditions ensuring a stable growth of aluminum nitride filiform crystals. The crystals were grown in graphite boats in a horizontal tube furnace with a graphite heater. In most cases, the boat was set in the working zone so that there were virtually no temperature gradients in the growth zone. Temperature was measured with an optical pyrometer. Visual observation of the course of the process was conducted with a cathetometer. Metallic aluminum in the form of wire or chips served as the burden material; furnace heater and boats were made of brand ARV graphite. High-purity nitrogen containing no more than 0.00% oxygen and pure argon containing 0.0% nitrogen and no more than 0.00% oxygen served as the working gases.

The experiments indicated that the optimum parameters of the filiform crystal growth process are determined by temperature, gas composition, etc. It was found that with an increase in the degree of supersaturation the thickness of nitride filiform crystals increases, and the rate of linear growth at first increases and

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201020002-2"

USSR

PORTNOY, K. I., and GRIBKOV, V. N., Poroshkovaya Metallurgiya, No 5, May 70, pp 10-14

then decreases, passing the maximum. It was shown that the primary growth of whiskers occurs on those portions of the surface near which, in the gas phase, there are high concentration gradients of the precipitable substance. It was established that substance transport in the process of AlN whisker growth during aluminum nitriding is accomplished by aluminum vapors entering the gas phase via diffusion of aluminum through the nitride surface layer. It was also determined that the elastic modulus of AlN whiskers does not depend on crystallographic orientation and comprises 30,000-33,000 kg/mm^2

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UDC 632.95

USSR

GRIBKOVA, N. I., North Caucasian Zonal Scientific Research Institute of Horticulture and Viniculture

"Effectiveness of Insecticides Against the Borer Moths"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 11, No 8 (118), 1973, pp 32-34

Abstract: The most effective agents against the moth Stigmella malella Stt were the emulsions of metaphos (0.2--0.3%), phtalophos (0.5%), phozalone (0.2--0.3%), metathione (0.1--0.2%) and folithione (0.1%). Sevin, rogor and chlorophos were less effective. The use of above agents is advisable only in cases of low infections. The experiments were carried out in 1968-1971 in the Krasnodarsk region.

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USSR UDC 577.11

TSVETKOVA, I. V., GRIBKOVA, N. V., and LIPKIND, M. A., Institute of Biological and Medical Chemistry, USSR Academy of Medical Sciences, Moscow, D. I. Ivanovskiy Institute of Virology, USSR Academy of Medical Sciences, Moscow, and Moscow Academy of Veterinary Medicine

"Effect of Detergents on the Activity of Functional Viral Proteins and on Their Distribution in Organelles of Virus-Infected Cells"

Moscow, Biokhimiya, No 4, 1973, pp 771-778

Abstract: The activity of neuraminidase and hemagglutinin in chick embryo fibroblasts infected with Newcastle disease virus was studied in cell homogenates treated with Tween 80, Triton X-100, and other detergents (sodium dodecylsulfate, sodium desoxycholeate, digitonin). Tween 80 and Triton X-100 increased the activity of the proteins and redistributed it among the cell organelles. Their activity shifted to the lighter fractions, particularly the "cell juice" where both neuraminidase and hemagglutin were practically absent when the homogenate not treated with a detergent was absent. Treatment with Triton X-100 caused a greater increase in the activity of the homogenate

USSR

TSVETKOVA, I. V., et al., Biokhimiya, No 4, 1973, pp 771-778

and a more pronounced shift of the proteins to the cell juice. Treatment with Tween 80 did not increase the activity of the homogenate as much and "shifted" it mainly to the mitochondrial-microsomal and ribosomal fractions.

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1/2 028 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--STRUCTURAL CHANGES IN SOME AROMATIC POLYIMIDES AT HIGH TEMPERATURES -U-

AUTHOR-(03)-GRIBKOVA, P.N., RODE, V.V., KORSHAK, V.V.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 568-75

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MOLECULAR STRUCTURE, PYROLYSIS, POLYMER CROSSLINKING, ANILINE, PHTHALIC ANHYDRIDE, TENSILE STRENGTH, POLYIMIDE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1347 STEP NO--UR/0062/70/000/003/0568/0575

CIRC ACCESSION NO--AP0135021

UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0135021

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOL. FORMS OF LINEAR POLYIMIDES GASED ON PYROMELLITIC DIANHYDRIDE AND ANILINEPHTHALEIN POLYIMIDES BASED ON PYROMELLITIC DIANHYDRIDE AND ANILINPHTHALEIN AND ON 4,4PRIME,OXYBIS(PHTHALIC ANHYDRIDE) AND ANILINEFLUORENE WERE SUBJECTED TO PYROLYSIS AND CONCURRENT THERMAL THE THERMAL OXIDATIVE AGING AT LESS THAN OR EQUAL TO 375DEGREES. THE AGING OF THESE POLYIMIDES AT TEMPS. PRIOR TO WT. LOSS INITIATION WAS DUE TO CROSSLINK FORMATION AS WELL AS DESTRUCTION (THE LESS PRONOUNCED PROCESS). CROSSLINK FORMATION RESULTS IN PROPERTY CHANGES WHICH INCLUDE INCREASED TENSILE STRENGTH, ESP. AFTER 1 HR IN VACUO AT SIMILAR TO 400DEGREES, WHEN A NEARLY 40PERCENT INCREASE IS OBSERVED. CROSSLINK FORMATION WAS READILY FOLLOWED BY TURBIDIMETRY. AS THE TEMP. WAS RAISED, THE DIFFERENTIAL CURVES OF MOL. WT. DISTRIBUTION OF THE POLYMERS DEVELOPED A TWINNED MAX., SHOWING THE PRESENCE OF LOW AND HIGH MOL. WT. FRACTIONS. FACILITY: INST. ELEMENTOORG. SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr: AP0041737 Abstracting Service: CHEMICAL ABST. 4-70 Ref. Code: UR0459

79596s **Degradation of aromatic polyimides at high temperatures.** Gribkova, P. N.; Rode, V. V.; Vygodskii, Ya. S.; Vinogradova, S. V.; Korshak, V. V. (Inst. Elementoorg. Soedin., Moscow, USSR). *Vysokomol. Soedin., Ser. A* **1970**, 12(1), 220–8 (Russ). The thermal degradation in vacuo, O, and air of aromatic polyimides (I) at 375–600° was investigated. I were prepd. by polycondensation of pyromellitic anhydride with 3,3-bis(*p*-aminophenyl)phthalide or 9,9-bis(*p*-aminophenyl)fluorene (II) and from 3,3',4,4'-tetracarboxydiphenyl ether and II. I were stable in vacuo at ≤425–75° but began to decomp. at higher temps. to yield solid and liq. low-mol.-wt. substances, as well as CO, CO_2, and H. Decompn. began via homolytic cleavage of the imide rings and isomerization. O did not initiate the degradation but oxidized the cleavage product to accelerate the degradation of I. The presence on the central C atom of the starting diamine of a closed, cyclic group capable of conjugation increased the thermal stability of I. DBJR

REEL/FRAME
19751614

1/2 044 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--THE LASERS PROFESSION -U-

AUTHOR--GRIBKOVSKIY, V.

COUNTRY OF INFO--USSR

SOURCE--SOVETSKAYA BELORUSSIYA, JUNE 19, 1970, P 2, COLS 5-8

DATE PUBLISHED--19JUN70

SUBJECT AREAS--METHODS AND EQUIPMENT, PHYSICS

TOPIC TAGS--QUALITY CONTROL, NONDESTRUCTIVE TEST, SURFACE PROPERTY, MACHINE INDUSTRY, LASER EQUIPMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/0801 STEP NO--UR/9016/70/000/000/0002/0002

CIRC ACCESSION NO--AN0111987

UNCLASSIFIED

2/2 044 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AN0111987
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LASER RESEARCH, DIRECTED AT THE DEVELOPMENT OF NEW INSTRUMENTS AND METHODS FOR SPECTRAL ANALYSIS AT THE INSTITUTE OF PHYSICS, IS GUIDED BY CANDIDATE OF PHYSICAL MATHEMATICAL SCIENCES A. YANKOVSKIY. THE ARTICLE LISTS VARIOUS INDUSTRIAL APPLICATIONS OF LASERS, INCLUDING CHECKING THE SURFACE QUALITY AND DETERMING COORDINATES IN THE MACHINE CONSTRUCTION INDUSTRY, WITH ACCURACY OF 02.5 MICRONS.

UNCLASSIFIED

USSR

UDC 535.376:621.382

GRIBKOVSKIY, V.P., KONONENKO, V.K., MARKITSKIY, YU.V., SAMOYLYUKOVICH, V.A.

"Ways Of Increasing The Efficiency Of Semiconductor Light Sources"

V sb. Elektrolyuminestsentsiya tverd. tel. (Electroluminescence Of Solid Bodies--Collection Of Works), Kiev, "Nauk.dumka," 1971, pp 107-113 (from RZh--Elektronika i yeye primeneniye, No 11, Nov 1971, Abstract No 11B371)

Translation: The dependence is studied of the indicatrix of radiation of electroluminescent diodes on their dimensions, form, and intensity of excitation. The waveguide regions in which radiative recombinations take place are discussed. Formulas are obtained which take account of all the parameters of the diode for radiation flow, limiting efficiency, optimum effective losses, and the optimum current in sources of coherent light. At 77° K in a regime of stimulated emission, 48-watt power was obtained experimentally with diffused gallium arsenide diodes, and an effectiveness of the p-n junction of 53 percent attained. 1 ill. 13 ref. Summary.

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1/2 036 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--GENERATION OF RADIATION AT JUNCTIONS WITH THE PARTICIPATION OF GAUSSIAN IMPURITY ZONES -U-
AUTHOR-(02)-GRIBKOVSKIY, V.P., KONONENKO, V.K.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. SPEKTROSK. 1970, 12(1), 45-56

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SEMICONDUCTOR JUNCTION, SEMICONDUCTOR LASER, GAUSSIAN DISTRIBUTION, IMPURITY LEVEL, STIMULATED EMISSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1457 STEP NO--UR/0368/70/012/001/0045/0056

CIRC ACCESSION NO--AP0118446

UNCLASSIFIED

2/2 036 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0118446
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN EXAMN. IS MADE OF A MODEL OF RADIATION GENERATED AT JUNCTIONS WITH GAUSSIAN IMPURITY ZONE PARTICIPATION INVOLVING CALCNS. OF THRESHOLD DEPENDENCE ON LOSS IN A LASER DIODE, AND A DETN. OF THE INFLUENCE OF ALLOYING, TEMP., AND ABSORPTION BY FREE CARRIERS. ANAL. FORMULAS ARE DERIVED FOR THE SIMPLEST CASES. CALCNS. ALSO ARE MADE OF DIRECT INTERZONAL JUNCTIONS AT HIGH TEMPS.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--USE OF THE CHEMICAL POTENTIAL CONCEPT FOR DESCRIBING THE SPECTRAL PROPERTIES OF COMPLEX MOLECULES -U-

AUTHOR-(02)-STEPANOV, B.I., GRIBKOVSKIY, V.P.

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ANALOGY BETWEEN THE OPTICAL PROPERTIES OF COMPLEX MOLS. AND OF SEMICONDUCTORS IS PRESENTED AND THE POSSIBILITY OF THE CALCN. OF THERMODYNAMIC FUNCTIONS FOR EXCITED AND NON EXCITED COMPLICATED MOLS. IS DISCUSSED. THE CHEM. POTENTIAL CONCEPT AND ITS USED FOR QUAL. DESCRIBING ABSORPTION AND RADIATION PROCESSES ARE EXPLAINED. FACILITY: INST. FIZ., MINSK, USSR.

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COOLING OF CURRENT CARRIERS SCATTERING THEIR ENERGY ON THE OPTICAL LATTICE UIBRATIONS

Z. S. Gribnikov, V. A. Kochelap

If the mean free time for a current carrier with respect to optical phonon emission in a dielectric or high resistance semiconductor is much smaller than its energy relaxation time involved in quasielastic scattering mechanisms, then in electric fields of intermediate strength the isotropic component $f_0(\varepsilon)$ of the quasi-isotropic distribution function becomes independent of the electric field and the carrier mobility in the substance becomes ohmic. This «second» (in distinction to the equilibrium, or «first») ohmic section must necessarily precede the section of drift velocity saturation in the low temperature case ($\hbar\omega_0 \gg kT$); however it may also exist when saturation is absent. The shape of function $f_0(\varepsilon)$ on the «second» ohmic section is determined by the energy dependence of the mean free path relative to elastic scattering $l(\varepsilon)$. If the length is small for $\varepsilon \approx 0$ and sufficiently rapidly decreases with $\varepsilon \to 0$ then in the low temperature case the current carrier gas will be cooler than in the equilibrium case.

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TITLE--TENSODIODE EFFECT DURING THE BENDING OF ELONGATED SEMICONDUCTOR DIODE PLATES -U-

AUTHOR-(04)-GRIBNIKOV, Z.S., ZHADKO, I.P., ROMANOV, V.J., SEREGA, B.K.

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL AND EXPERIMENTAL STUDY OF THE EFFECT OF BENDING ON THE CURRENT VOLTAGE CHARACTERISTIC OF ELONGATED FLAT SEMICONDUCTOR DIODES. PROCEDURES ARE GIVEN FOR CALCULATING THE CURRENT VOLTAGE CHARACTERISTICS OF DIODES OF THIS CLASS, SUBJECTED TO BENDING. THE CURRENT VOLTAGE CHARACTERISTICS OF GERMANIUM DIODES OF THIS CLASS ARE MEASURED. THE DEPENDENCE OF THESE CHARACTERISTICS ON THE TYPE AND DEGREE OF BENDING AND THE LENGTH OF THE DIODE BASE IS STUDIED. THE EXPERIMENTAL RESULTS ARE FOUND TO BE IN GOOD AGREEMENT WITH THEORETICAL EXPECTATIONS. IT IS BELIEVED THAT THESE DIODES CAN BE EFFECTIVELY USED IN AUTOMATIC CONTROL SYSTEM.

FACILITY: AKADEMIIA NAUK UKRAINS'KOI RSR, INSTITUT NAPIVPROVIDNIKIV, KIEV, UKRAINIAN SSR.

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ANIKEICH, A. A., GRIBOV, A. B. and SURIN, S. S.

"A Three-Stage Approach in Developing an Economic-Mathematical Model of a Transport Process on a Computer"

V sb. Issled. operatisy i stat. modelir (Operations Research and Statistical Modeling--collection of works), First Edition, Leningrad, Leningrad University, 1972, pp 10 - 33 (from RZh Matematika, No 11, Nov 73, abstract No 11 V 710)

Translation: One of the current problems in automotive transport is ensuring the optimal shift and daily planning of transportation. The model described in this article was published in works previously abstracted (RZh Mat 1966, 11 V254; 1970, 3 V449). This is a complex problem of finding the optimum (including the constraint that several variables be integral). The authors believe that the computer solution of problems of this volume and complexity should be approached with the application of a combination of various methods. It is useful in the first stage to consider a problem which is similar to the initial problem, solving it by any efficient approximation method which will yield an acceptable plan for the initial problem. Then, in the second stage, the initial problem is solved by an approximation method, using the results obtained in the first stage. Finally, in the third stage, approximate solutions obtained in the preceding stages are made more exact until the optimum is reached. The accomplishment of this

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ANIKEICH, A. A., et al., V sb. Issled. operatisy i stat. modelir, 1972, pp 10-33

concept for the problem of ensuring optimal shift-daily load planning is further explained. An approximation method is developed. Experience in solving this problem shows that in the overwhelming majority of cases the value of the functional for integral plans was 0.5-3% greater than the functional for non-integral plans. The results of the solution of a practical problem are given. A program is written in ALGOL-60 for the first stage of problem solution.

Abstract by Yu. Finkel'shteyn.

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ANIKEICH, A. A. and GRIBOV, A. B.

"Approximation of Elements of the Matrix of the Sum of the Corresponding Components of Two Vectors"

Issled. Operatsiy i Stat. Modelir. [Operations Research and Statistical Modeling], No 1, Leningrad University Press, 1972, pp 3-9 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V495)

Translation: Number matrix $||a_{ij}||$ is given. The problem is to find the number x_i and y_j, minimizing

$$\lambda = \max_{i,j} |a_{ij} - x_i - y_j|.$$

This problem, arising from the requirement for economic storage of a matrix in computer memory, can be solved as a problem of linear programming. A specialized method is suggested which is more convenient for machine realization.

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TRAVKIN, N. N., GRIBOV, B. G., RUMYANTSEVA, V. P., KOZYRKIN, B. I., and SALAMATIN, B. A.

"A Thermographic Study of Organometallic Compounds. I. Thermal Dissociation of Bis-Arene Compounds of Chromium"

Leningrad, Zhurnal Obshchey Khimii, Vol XL, No 12, Dec 70, pp 2677--2679

Abstract: Bis-Arene π-complexes of chromium are a prominent and increasingly important source of pure chromium, low-resistance film-type resistors, and other products; but the decomposition of these compounds has not been thoroughly studied, and this impedes their effective utilization.

Heat resistance of several of these compounds was determined experimentally; they can be arranged in the following order of increasing resistance: $(C_6H_6)_2Cr < (CH_3C_6H_5)_2Cr < (C_2H_5C_6H_5)Cr < [(CH_3)_3C_6H_3]_2Cr$. It was shown in addition that decomposition of bis-Arene chromium compounds proceeds according to the general formula $(Ar)_2Cr \rightarrow 2Ar + Cr$.

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